UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,372	12/21/2001	Jeffrey A. Trogolo	A-035 US	5146

7590 02/13/2006

AGION TECHNOLOGIES
60 Audubon Road
Wakefield, MA 01880

EXAMINER	
CHOI, FRANK I	

ART UNIT	PAPER NUMBER
1616	

DATE MAILED: 02/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/032,372	TROGOLO ET AL.	
	Examiner	Art Unit	
	Frank I. Choi	1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/17/2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-4,6,7,10-12,14-21,38,40-43,45,51-56,60,61 and 63-83* is/are pending in the application.

4a) Of the above claim(s) *41,43,82 and 83* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-4,6,7,10-12,14-21,38,40,42,45,51-56,60,61 and 63-81* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *See Continuation Sheet* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/17/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

After the amendment (11/17/2005), claims 2-4,6,7,10-12,14-21,38,40-43,45,51-56,60,61,,63-83 are pending. Claims 2-4,6,7, 10-12, 14-21, 38,40, 42, 45, 51-56,60,61,63-81 are directed to the elected invention with claims 41, 43, 82, 83 are withdrawn as directed to the nonelected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-4,6,7,10-12, 14-21, 38,40, 42, 45, 51-55,56,60,61,63-68, 70-77,79-81 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Evidence that said claims fail to correspond in scope with that which applicant(s) regard as the invention can be found in the reply filed 11/17/2005. In that paper, applicant has stated that "Osaka . . . specifically teaches away from the ceramic particles of Applicant's invention", and this statement indicates that the invention is different from what is defined in the claims because only claims 7, 56, 69 and 78 require the presence of a ceramic antimicrobial agent. Since Osaka was not used to reject claims 7,56,69,78, it appears that said argument applies to claims 2-4,6,10-12, 14-21, 38,40, 42, 45, 51-55,60,61,63-68, 70-77,79-81. Further, Applicant states that "Osaka teaches away from particle sizes up to 100 microns and towards smaller particles especially those below 500 nm and preferable below or near 100 nm in diameter", and this statement indicates that the invention is different from what is defined in the claims because only claims 51,52,53,54,60,61,64-83 have a encapsulated antimicrobial having a

minimum size above the express disclosure in Osaka used to reject the claims under 35 USC 102 (there is disclosure which would make one or more of the claims obvious as indicated below).

See MPEP Section 2171.

Claims 74-80 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims refer to an "antimicrobial additive" according to the claim 73, however, claim 73 is not an "antimicrobial additive" but a "polymer composition". As such, the claims are indefinite.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-4,10, 11, 14,15, 38, 42, 55, 63 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 11-222402.

JP 11-222402 expressly discloses antimicrobial acrylamide particles (mean particle diameter of about 60-90 nanometers, 90-120 nanometers, 90-120 nanometers) containing silver (22.8% by weight, 35.2% by weight and 25.7% by weight) which is incorporated into Aronix

UV-3701 or ARON NS-1200 and hardened to form a film falling within the scope of applicant's claims (Paragraphs 0043-0055).

Alternatively, at the very least the claimed invention is rendered obvious within the meaning of 35 USC 103, because the prior art discloses products and uses that contain the same exact ingredients/components as that of the claimed invention. See In re Fitzgerald, 205 USPQ 594 (CCPA 1980). See also In re May, 197 USPQ 601, 607 (CCPA 1978). See also Ex parte Novitski, 26 USPQ2d 1389, 1390-91 (Bd Pat. App. & Inter. 1993).

Examiner had duly considered Applicant's arguments but deems them unpersuasive.

The size of the inorganic particle in the claim is not defined, as such, a metal cation appears to fall within the scope of the claim. Applicant argues that Osaka teaches away from the ceramic particles of Applicant's invention. However, Applicant's claims do not require the presence of ceramic particles. Applicant argues that Osaka teaches away from particle sizes up to 100 microns and towards smaller particles especially those below 500 nm and preferable below or near 100 nm in diameter and cites to a Trogolo article. However, the rejected claims do not set forth a minimum size which is above that disclosed in Osaka. Examiner notes that Applicant's argument, while long and detailed, appears to be directed toward two issues, i.e. that, unlike Osaka, Applicant's invention is directed to the use of ceramic particles, i.e. ion-exchange carriers and are of size for optimal loading and effectiveness of the antimicrobial agents. However, as indicated above, none of the rejected claims require the use of ceramic particles or specifically recite a minimum size, much less a size which is greater than the sizes disclosed in Osaka. As such, Applicant's arguments do not overcome the rejection herein.

Claims 2-4, 10-12,14-17, 19-21, 38,40, 42, 45,51-55,63 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-222402 in view of JP 4-66512 and Turner et al. (US 2003/0043341).

JP 11-222402 discloses antimicrobial acrylamide particles (mean particle diameter of about 60-90 nanometers, 90-120 nanometers, 90-120 nanometers) containing silver (22.8% by weight, 35.2% by weight and 25.7% by weight) which is incorporated into Aronix UV-3701 or ARON NS-1200 and hardened to form a film (Paragraphs 0043-0055). It is disclosed that the hydrophilic polymer particle containing the antimicrobial metal, such as silver, platinum, copper, zinc, nickel, cobalt, molybdenum, chromium etc., can have a diameter of 0.1 nanometers to 100 micrometers and that the particle can be incorporated into a resin (Paragraphs 0006,0007, 0023-0025). It is disclosed that the hydrophilic polymer can be composed of hydroxyl content monomers, such as alkyl (meth) acrylate, nitrogen content monomers, such as vinyl-pyrrolidone and acrylamide, and poly isocyanate and can contain two or more different hydrophilic units, is compatible with the hydrophobic resin (Paragraphs 0008-0010). It is disclosed that the antibacterial metal can be in the form of a complex with a quaternary ammonium compound which also has antibacterial activity (Paragraph 0027). It is disclosed that the resin can be selected from poly ethylene, poly propylene, ABS, epoxy resin, styrene resin, poly vinyl chloride (Paragraph 0036).

JP 4-66512 (citation is to the English language translation provided by Applicant) disclose an antimicrobial silver salt which is coated with polyurethane resin prepared from poly isocyanate (pgs. 7,9-12). It is disclosed that the coated antimicrobial silver salt can be incorporated into a thermoplastic or thermosetting resin (Pgs. 13-15).

Turner et al. discloses that sodium nitrate reduces discoloration caused by silver (Paragraphs 0061, 0062).

The difference between the prior art and the claimed invention is that the prior art does not expressly disclose an inorganic antimicrobial which is encapsulated with hydrophilic polymer having an average diameter of about 2000 microns or less, further comprising at least one of the following: an ammonium salt, sodium nitrate, incorporation into an addition polymer, an average diameter from about 15 to about 1000 microns or about 50 to about 300 microns. However, the prior art amply suggests the same as the prior art discloses incorporation of hydrophilic particles containing inorganic antibacterial agents into addition polymers having sizes overlapping the claimed range, the coating of antibacterial silver salt by polyurethane and incorporation into resin, the use of ammonium ions and the sodium nitrate. As such, it would have been well within the skill of and one of ordinary skill in the art would have been motivated to modify the prior art as above with the expectation that the combination of antibacterial inorganic salts and hydrophilic polymers would result in increased antibacterial activity, that addition of ammonium ions would provide greater antibacterial activity and the sodium nitrate would inhibit discoloration of the polymer composition.

In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of "about 1-5%" while the claim was limited to "more than 5%." The court held that "about 1-5%" allowed for concentrations slightly above 5% thus the ranges overlapped.); In re Geisler, 116 F.3d 1465, 1469-71, 43 USPQ2d 1362, 1365-66 (Fed. Cir. 1997) (Claim reciting thickness of a protective layer as falling within a range of "50 to 100

Angstroms" considered prima facie obvious in view of prior art reference teaching that "for suitable protection, the thickness of the protective layer should be not less than about 10 nm [i.e., 100 Angstroms]." The court stated that "by stating that suitable protection' is provided if the protective layer is about' 100 Angstroms thick, [the prior art reference] directly teaches the use of a thickness within [applicant's] claimed range.").

Examiner has considered Applicant's arguments but deems them unpersuasive for the same reasons as above. With respect to the claims where size is claimed, Osaka specifically discloses the use of particle sizes which overlap that claimed as indicated above and as admitted by Applicant. Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). "A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." In re Gurley, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994) (The invention was directed to an epoxy impregnated fiber-reinforced printed circuit material. The applied prior art reference taught a printed circuit material similar to that of the claims but impregnated with polyester-imide resin instead of epoxy. The reference, however, disclosed that epoxy was known for this use, but that epoxy impregnated circuit boards have "relatively acceptable dimensional stability" and "some degree of flexibility," but are inferior to circuit boards impregnated with polyester-imide resins. The court upheld the rejection concluding that applicant's argument that the reference teaches away from using epoxy was insufficient to overcome the rejection since "Gurley asserted no discovery beyond what was known in the art." 27 F.3d at 554, 31 USPQ2d at 1132.). With respect to the Trogolo article, said article is insufficient to over come the rejection here as the claims do not set forth a minimum size of the inorganic antimicrobial

particle and the size range of encapsulated particles in the prior art and the claimed invention overlap. Further, it not unexpected and readily apparent that 100 micron particles can have greater silver content then nano sized particles. As such, a comparison between the two is not sufficient probative of non-obviousness, especially where, as in this case, the prior art discloses the use of 100 micron size particles.

Therefore, the claimed invention, as a whole, would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, because every element of the invention has been collectively taught by the combined teachings of the references.

Claims 2-4,6,7,10-12,14-21,38,40,42,45,51-56, 60, 61,63-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 4-66512 in view of Takebayashi et al. (US Pat. 6,113,936), Niira et al. (US Pat. 5,556,699), Wada et al. (US Pat. 3,981,970) and Turner et al. (US 2003/0043341) for the reasons of record and the further reasons below.

JP 4-66512 (citation is to the English language translation provided by Applicant) disclose a silver zeolite which is coated with polyurethane resin (pgs. 7, 8, 11,12). It is disclosed that the coated silver zeolite can be incorporated into a thermoplastic or thermosetting resin (Pgs. 13-15). An example is disclosed in which the antimicrobial zeolite is prepared by addition of silver nitrate and ammonia and thereafter coated with the polyurethane in an amount of 1.5% by weight or 3% by weight (Pgs. 16-18). An example is disclosed in which said coated zeolite is incorporated into a polypropylene resin which thereby exhibits antimicrobial activity (Pgs. 19-21).

Takebayashi et al. disclose a method of microencapsulating silver zeolite with polyurethane where the average diameter of the obtained microcapsule is usually from 0.1 to 300 micrometers, preferably from 0.5 to 200 micrometers and the core particle is usually from 0.1 to

200 micrometers, preferably 0.5 to 100 micrometers (See entire reference, especially Column 2, lines 1-13, Column 3, line 9, Column 4, line 66, Column 5, lines 60-64).

Niira et al. teach that antibiotic zeolites containing silver which further incorporate ammonium ions effectively prevent discoloration of resins into which the antibiotic zeolites are incorporated (Column 2, lines 11-23).

Wada et al. teach that the exchange of cations in zeolite is a equilibrium reaction (Column 1, lines 1-48). An exchange reaction process is taught whereby silver ions are introduced to sodium containing zeolite with the result being silver zeolite plus any excess silver ion and sodium ion (Column 3, lines 5-11). An exchange reaction process is taught in which nitric acid is introduced into silver zeolite with the result being hydrogen zeolite, silver nitrate and any excess nitric acid (Column 3, lines 12-15).

Turner et al. discloses that sodium nitrate reduces discoloration caused by silver (Paragraphs 0061, 0062).

The difference between the prior art and the claimed invention is that the prior art does not expressly disclose an inorganic antimicrobial which is encapsulated with hydrophilic polymer having an average diameter of about 2000 microns or less, optionally further comprising an ammonium salt or sodium nitrate or optionally further incorporated into an addition polymer. However, the prior art amply suggests the same are antibacterial silver zeolites which are incorporated into addition polymers, the combination antibacterial silver zeolites and hydrophilic polymers, such as polyurethane, the use of ammonium ions and the exchange of silver with sodium ions and nitric acid are known in the art. As such, it would have been well within the skill of and one of ordinary skill in the art would have been motivated to modify the prior art as above with the expectation that the combination of antibacterial silver zeolites and hydrophilic

polymers would result in increased antibacterial activity, that addition of ammonium ions would inhibit discoloration of polymer resins, in which the antibacterial zeolite/hydrophilic polymer is incorporated and that the addition of a salt of sodium ion and nitric acid, i.e. sodium nitrate, would drive the silver ions out of the zeolite thereby increasing the amount of free silver ions available for antibacterial effect.

Examiner has duly considered Applicant's arguments but deems them unpersuasive.

Applicant's reliance on distinguishing disclosed examples is insufficient to over come the rejection herein. As indicated above, disclosed examples and preferred embodiments do not teach away from broader disclosure or non-preferred embodiments. Also, with respect to Takebayahi et al., the mere fact that alternative actives are disclosed is insufficient to overcome the rejection herein. See In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004)("The prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...."). With respect to the particle size, the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); In re Dillon, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), cert. denied, 500 U.S. 904 (1991). Applicant provides no evidence that Takebayahi et al. does not contemplate the incorporation of multiple particles merely because a nonionic surfactant is used. The arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997) ("An assertion of what seems to follow from common

experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of obviousness.").

With respect to discoloration, inhibition of discoloration is not unexpected as the prior art discloses that ammonium ions are effective for the same. With respect to the use of dopant, based on the teachings above, it is logical that sodium nitrate will act a dopant from action of sodium and nitric acid disclosed in Wada. The intended use of the zeolite in Wada et al. does not change this conclusion. Further, Turner provides another reason to use sodium nitrate. As indicated above, the motivation to use a compound can be different from Applicant's. Turner et al. is not being cited for its disclosure of coating zeolite with a hydrophobic polymer or for using sodium nitrate as a dopant. In any case, it would obvious to avoid using hydrophobic coatings if slow release of the silver was not desired. See Ex parte Wu , 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989) (Claims at issue were directed to a method for inhibiting corrosion on metal surfaces using a composition consisting of epoxy resin, petroleum sulfonate, and hydrocarbon diluent. The claims were rejected over a primary reference which disclosed an anticorrosion composition of epoxy resin, hydrocarbon diluent, and polybasic acid salts wherein said salts were taught to be beneficial when employed in a freshwater environment, in view of secondary references which clearly suggested the addition of petroleum sulfonate to corrosion inhibiting compositions. The Board affirmed the rejection, holding that it would have been obvious to omit the polybasic acid salts of the primary reference where the function attributed to such salt is not desired or required, such as in compositions for providing corrosion resistance in environments which do not encounter fresh water.). See also In re Larson, 340 F.2d 965, 144 USPQ 347 (CCPA 1965) (Omission of additional framework and axle which served to increase the cargo carrying capacity of prior art mobile fluid carrying unit would have been obvious if this feature was not desired.);

and In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (deleting a prior art switch member and thereby eliminating its function was an obvious expedient).

Therefore, the claimed invention, as a whole, would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, because every element of the invention has been collectively taught by the combined teachings of the references.

Claims 2-4, 10, 11, 14-15, 51, 52, 60,61,63-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lew et al. (US Pat 5,599,583).

Lew et al. disclose encapsulation of fungicides such as copper salts with water soluble polymers, including PEG strengthened with polyvinylpyrrolidone (Column 3, lines 23-40, 44,45, Column 5, lines 55-60). It is disclosed that the active ingredient solids exhibit a size of less than about 100 micrometers in diameter and that the product capsules should be formed within the range from about 150 micrometers to about 1500 micrometers (column 4, lines 51-63, Column 7, lines 18-25).

The difference between the prior art and the claimed invention is that the prior art does not expressly disclose an inorganic antimicrobial which is encapsulated with hydrophilic polymer having an average diameter of about 2000 microns or less. However, the prior art amply suggests the same as the prior art discloses the copper salt fungicide encapsulated with water soluble polymers having diameter of from about 150 to 1500 micrometers. As such, it would have been well within the skill of and one of ordinary skill in the art would have been motivated to modify the prior art as above with the expectation that the encapsulation would render the copper salt easy to handle, reduce or eliminate exposure concerns and provide a measure of control over the rate, timing and duration of the copper salt (Column 1, lines 35-43).

Examiner has duly considered Applicant's arguments but deems them unpersuasive.

Contrary to Applicant's arguments there is no impermissible hindsight approach. "Any judgement on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper." In re McLaughlin 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971). Further, the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); In re Dillon, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), cert. denied, 500 U.S. 904 (1991). In any case, there is nothing in the claims which indicates that the polymers swell but do not dissolve. Applicant has not provided any evidence that the hydrophilic polymers which are not incorporated into polymer composition swell but do not dissolve.

Therefore, the claimed invention, as a whole, would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, because every element of the invention has been collectively taught by the combined teachings of the references.

Claims 2-4, 10, 11, 14-17, 60,61,63-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stapler et al. (US Pat 5,382,424).

Stapler et al. disclose encapsulation of antimicrobials, including quaternary ammonium salts and zinc and copper salts in gelatin, polyvinyl alcohol sucrose esters, gums, sucrose esters and sugar candy type materials used in cough drops and mints (Column 2, lines 8-13, 23-28). It is disclosed that the shell thickness is preferably in the range of about 30 micrometers to about 2

mm, preferably from about 70 micrometers to about 110 micrometers and the particle diameter is generally in the range of from about 2 mm to about 9 mm, preferably from about 3 to about 7 mm (Column 2, lines 13-21). It is disclosed that the amount of antimicrobial agents is from about 0.001% to 2% of the total core contents (Column 2, lines 34-36). Examples are disclosed contain gelatin, saccharin, and cetyl pyridinium chloride or zinc chloride (Column 3, 15-45).

The difference between the prior art and the claimed invention is that the prior art does not expressly disclose a inorganic antimicrobial which is encapsulated with hydrophilic polymer having an average diameter of about 2000 microns or less, optionally further comprising an ammonium compound. However, the prior art amply suggests the same as the prior art discloses the ammonium and zinc and copper salt antimicrobials encapsulated with gelatin, polyvinyl alcohol, sucrose esters and/or sugar candy materials having a diameter of about 2 mm.. As such, it would have been well within the skill of and one of ordinary skill in the art would have been motivated to modify the prior art as above with the expectation that the encapsulation of a core containing the antimicrobial would allow control of breath odor without having to expectorate as would be required with a mouthwash (Column 1, lines 15-25). Further, it would have been well within the skill of one of ordinary skill in the art to combine the ammonium compound and copper and/or zinc salt with the expectation that the combination would also have antimicrobial activity.

Examiner has duly considered Applicant's arguments but deems them unpersuasive for the same reasons as above with respect to Lew et al.. Further, Applicant argues that one would not look to art fro preparing breath protection microcapsules for creating improved antimicrobial agents for incorporation into polymer materials. However, Applicant claims are directed to encapsulated antimicrobials not an encapsulated antimicrobial contained in a polymer

composition. The intended use or reason for preparing said encapsulated antimicrobials does not have to be the same as the prior art for the prior art to be applicable. In any case, the encapsulation of antimicrobials in polymers is reasonably pertinent in that the claims are directed to encapsulated antimicrobials. Stapler et al. does not require that antimicrobial dissolve in the diluent in that zinc and copper salts are disclosed as suitable antimicrobials.

Therefore, the claimed invention, as a whole, would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, because every element of the invention has been collectively taught by the combined teachings of the references.

Terminal Disclaimer

The terminal disclaimer filed on 11/17/2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of any patent granted with respect to application number 10/032,370 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Conclusion

A facsimile center has been established in Technology Center 1600. The hours of operation are Monday through Friday, 8:45 AM to 4:45 PM. The telecopier number for accessing the facsimile machine is 571-273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Choi whose telephone number is (571)272-0610. Examiner maintains a flexible schedule. However, Examiner may generally be reached Monday-Friday, 8:00 am – 5:30 pm (EST), except the first Friday of the each biweek which is Examiner's normally scheduled day off.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Mr. Gary Kunz, can be reached at 571-272-0887. Additionally, Technology Center 1600's Receptionist and Customer Service can be reached at (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FIC February 7, 2006

JOHN PAK
PRIMARY EXAMINER
GROUP 1600

Continuation of Disposition of Claims: Claims subject to restriction and/or election requirement are 2-4,6,7,10-12,14-21,38,40-43,45,51-56,60,61 and 63-83.